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weaving factories in Java, were the leading developments in local textile industries, but the bulk of cloth and even of raw cotton has been brought in from abroad. Just before the war Southeast Asia was absorbing textiles to the value of well over $300 million per annum; much of it was cheap cloth from Europe, India and Japan, but there was a substantial need for the very finest cotton cloth produced anywhere and quite an exacting local standard of qualities. Should this huge demand for textiles stimulate local industry within the new nationalist units, Burma, Siam and Indochina may improve the quality and output of their present scanty and very inferior raw cotton.

Road and rail management, engineering maintenance and port industries form a leading group of mechanical industries directly affecting local techniques and introducing forms of industrialisation on western lines. The capital equipment for these activities is imported as are nearly all metal manufactures for other purposes. Manufactured goods form the largest single category of goods moving into Southeast Asia, to a total of nearly $500 million annually before the war. These manufactured imports chiefly went to urban consumers, yet simple farming tools and articles like needles and scissors went in large quantities far into every country. Although this category was broad, the components were very varied so that the value of each ranked comparatively low. Manufactured articles of western type showed little sign of being made locally, except in Java where successful attempts at making electric equipment had gone on for some years to supply the Southeast Asia markets with very cheap electrical goods like lamps and filaments, suggesting the possibility that Java may become industrialised on the Japanese pattern for mass production methods, and using part-time or women workers. In neighbouring territories, however, there are no such immediate prospects because labour has proved costly in proportion to its skill.

Mining Industries and Prospects

Mining industries of great value have developed in Malaya, Burma, Sumatra, Borneo, the Philippines and the small islands east of Sumatra. Tin and petroleum have been the region's specialities so far and these have assumed great importance, combining to be chiefly responsible for the prewar annual exports of about $650 million of mineral products from Southeast Asia

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316 439 to the rest of the world. Iron ore and bauxite occur in large quantities, but without location convenient to the power needed to develop them. Gold has had special significance in Philippines mining, yet though found at many points, it ranks low for the region as a whole. Both tin and petroleum give rise to processing industries of smelting and refining which take place close to the streams of international traffic, particularly associated with Singapore and Penang. They play little part in local life, employ few people and go on at isolated points.

These mineral industries (which employed less than 250,000 persons before 1941) suffered from the war both by destruction in denial action and by neglect, so that they practically started anew from 1945. Whether they will all return to their prewar status remains to be seen. Southeast Asia provides the most prolific source of petroleum accessible to the Indian and Far Eastern markets and the wells are rapidly re-opening under the international oil groups which own them (output 1949, 9.0 million tons). Tin is coming back into production again more slowly because it needs more capital equipment such as pumps and dredges, which cannot be readily obtained, and there are some doubts whether world need for tin is likely to continue as great as before. The length of life of Malayan tin mines, the main prewar source, has been questioned, yet the little-known islands just south of Malaya are thought to contain extensive deposits of untouched tin likely to come into production in due course, though carefully screened for the time being from prospectors by local authorities. By 1950 the total tin output of Southeast Asia was about 99,000 tons.

Labour and Power for Industrialisation

464 Whether intensified industrialisation of Southeast Asia on the basis of these minerals is possible, turns upon two factors. Labour continues to be scarce; many prewar mining labourers dispersed during the war years when mining stagnated, and any immediate diversion of labour from agriculture to mining, even if possible under the tight ecology of the prevailing subsistence farming, is likely to prejudice local food supplies which depend basically on hand-grown rice.

316 Furthermore, Southeast Asia has limited sources of mechanical power, a factor not only of consideration regarding expansion of

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industries derived from mining, but also regarding the general prospect of local industrialisation. While good qualities are mined in Tonkin, coals of most Southeast Asia territories are of inferior grade and ill-suited to major industrial uses. This is an obstruction to developing the extensive iron ore deposits because only Tonkin coal can be used for smelting. Mineral oil does not suit heavy industrial processes though diesel type heavy oil engines are widely used in existing local industries, and will probably be the source of power for any new dispersed industries.

Water power resources are huge and widely distributed. So far only minor harnessing of water has been done and it is remarkable that, although Southeast Asia people have evolved skilled techniques of using their water supplies for agriculture, they have shown little traditional interest in its use as power, even for textiles and rice-milling which might seem obvious needs. The high and fairly even rainfalls of the upland areas are assets for water power; only in the loose materials of volcanic flanks, as in Java, is there any great difficulty about the necessary damming. On the other hand, where the rivers have water enough and suitable relief, they are remote from the centres of greatest population concentration, where a labour corps is available. Hence of the 6½ million horse power estimated to be available from the waterways of the East Indies islands, hydro-electric stations with only a capacity of .2 million kilowatts had been installed and three-quarters of them were in Java. Outside the equatorial zone, the irregular régime of rivers renders them less suited for water power, and scarcely any hydraulic power is developed in Burma, Siam and Indochina. A single installation derived from a dam at Chenderoh across a major stream, the Perak River, motivates many tin mines of West Malaya. On the other hand, electrification (from imported coals) has become widespread throughout the urban centres of the whole region. It is possible that a dispersed industrialisation based on water power might rapidly develop on lines apparent in parts of Central Europe, and Southeast Asia might, by industrialising on water power and heavy oils, skip the phase of steam industrialisation through which both Europe and Eastern United States passed. On this basis the bauxites of Southeast Asia could come into full exploitation.

Apart from teak extraction, Southeast Asia forests have provided little international trade, which is more remarkable now that